



BOSTON EDISON

Pilgrim Nuclear Power Station
Rocky Hill Road
Plymouth, Massachusetts 02360

George W. Davis
Senior Vice President - Nuclear

July 5, 1991
BECO Ltr. 91-086

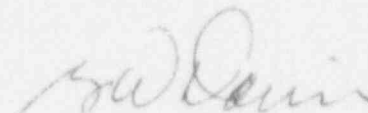
U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Docket No. 50-293
License No. DPR-35

Dear Sir:

The enclosed Licensee Event Report (LER) 91-011-00, "Inadvertent Primary Containment and Secondary Containment Isolation Signal During Surveillance Testing While Shutdown For Refueling", is submitted in accordance with 10 CFR Part 50.73.

Please do not hesitate to contact me if there are any questions regarding this report.


G. W. Davis

DWE/bal

Enclosure: LER 91-011-00

cc: Mr. Thomas T. Martin
Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Rd.
King of Prussia, PA 19406

Mr. R. B. Eaton
Div. of Reactor Projects I/II
Office of NRR - USNRC
One White Flint North - Mail Stop 14D1
11555 Rockville Pike
Rockville, MD 20852

Sr. NRC Resident Inspector - Pilgrim Station

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F430), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Pilgrim Nuclear Power Station

DOCKET NUMBER (2)

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PAGE (3)

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TITLE (4) Inadvertent Primary Containment and Secondary Containment Isolation Signal
During Surveillance Testing While Shutdown for Refueling

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)	
06	04	91	91	011	0	07	05	91	N/A	0 5 0 0 0	
										0 5 0 0 0	

OPERATING MODE (9)

N

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50.71 (Chap. 1000, 50.71)

POWER LEVEL (10)	20.402(b)	20.405(a)	50.73(a)(2)(i)	73.71(b)
0.00	20.405(a)(1)(i)	50.38(a)(1)	50.73(a)(2)(iv)	73.71(c)
	20.405(a)(1)(ii)	50.38(a)(2)	50.73(a)(2)(iv)	OTHER (Specify in Abstract below and in Text, NRC Form 360A)
	20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(iv) (ii)	
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(iv) (iii)	
	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(iv) (iv)	

LICENSEE CONTACT FOR THIS LER (12)

NAME

Douglas W. Ellis - Senior Compliance Engineer

TELEPHONE NUMBER

AREA CODE

5 0 8 7 4 7 - 3 1 1 0

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input checked="" type="checkbox"/>	<input type="checkbox"/>				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

On June 4, 1991 at 0056 hours, an inadvertent actuation of the Primary Containment Isolation Control System and Reactor Building Isolation Control System occurred during a surveillance test. The actuation resulted in isolations of the Primary and Secondary Containment Systems. The event occurred because of concurrent Reactor Protection System (RPS) Channel 'A' and 'B' low water level trip signals.

The root cause for the event was utility licensed operator error. The shift Nuclear Watch Engineer (senior licensed operator) did not ensure a sufficiently detailed review of plant conditions had been performed prior to authorizing the performance of the surveillance test. A Channel 'A' trip signal existed at the time of the event because a normally energized Channel 'A' relay had previously been tagged and de-energized for a maintenance activity. The surveillance test resulted in the expected trip of an electrical protection assembly that is part of the power supply for the Channel 'B' circuitry. The responsible Watch Engineer was counseled regarding the importance of ensuring plant conditions have been thoroughly reviewed prior to authorizing a surveillance test.

This event occurred during a refueling outage with the reactor mode selector switch in the REFUEL position. The Reactor Vessel (RV) was completely defueled and no fuel movement was in progress. The Control Rod Drive System was removed from service for maintenance. The RV/Refuel Cavity was flooded with the water temperature at 85 degrees Fahrenheit. This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv). This event posed no threat to the public health and safety.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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TEXT (If more space is required, use additional NRC Form 365A's) (17)

BACKGROUND

The 120 VAC power supply Panel C-511 consists of Bus 'A' and Bus 'B'. Power to these buses is normally provided from the Reactor Protection System (RPS) motor generator (MG) sets 'A' and 'B', respectively. The output of each MG set is provided with two in-series Electrical Protection Assemblies (EPAs). The EPAs function to ensure circuitry powered from Panel C-511 Bus 'A' and Bus 'B' is provided with proper voltage and frequency.

At the time of the event, Panel C-511 Bus 'A' was being powered from the RPS MG Set 'A' via EPA-1 and EPA-2, and Bus 'B' was being powered from the RPS MG Set 'B' via EPA-3 and EPA-4.

The RPS includes Channels 'A' and 'B'. RPS Channels A1 and A2 provide the Channel 'A' automatic trip function while Channel A3 provides the Channel 'A' manual trip function. Similarly, RPS Channels B1 and B2 provide the Channel 'B' automatic trip function while Channel B3 provides the Channel 'B' manual trip function. The circuitry contains relays that are normally energized and are designed to become de-energized for the trip function. RPS Channels A1/A2 relays 5A-K6A/C and Channels B1/B2 relays 5A-K6B/D provide a low water level trip function for RPS Channels 'A' and 'B', and the Primary Containment Isolation Control System (PCIS) Channels 'A' and 'B'. The RPS circuitry is arranged such that coincident Channel 'A' and Channel 'B' trip signals result in a scram signal.

The PCIS includes Channels 'A' and 'B'. PCIS Channel 'A' consists of Channels A1 and A2. PCIS Channel 'B' consists of Channels B1 and B2. The circuitry contains relays that are normally energized and are designed to become de-energized for the trip function. The PCIS circuitry is arranged such that coincident Channel 'A' (A1/A2) and Channel 'B' (B1/B2) trip signals result in an isolation signal.

The Reactor Building Isolation Control System (RBIS) Channel 'A' relay RPWAO and Channel 'B' relay RPWBO receive trip signals from the PCIS and logic relays that are controlled by the Refuel Floor Exhaust Radiation Monitors (RM-1705-8A/B/C/D). The RBIS circuitry is arranged such that an isolation signal results if coincident PCIS Channel 'A' and Channel 'B' trip signals (low water level or high Drywell pressure) occur or if the logic circuitry for RM-1705-8A/B/C/D is satisfied.

EVENT DESCRIPTION

On June 4, 1991 at 0056 hours, an actuation of the PCIS and RBIS occurred while shutdown. The event occurred during a scheduled surveillance test of EPA-3 that was being performed in accordance with procedure 3.M.3-34 (Rev. 9) Attachment 2, "Functional Test of EPA", step 12. For that step, the keylocked switch for EPA-3 was moved from the NORMAL position to the TEST position. This action resulted in the expected trip of EPA-3 and a loss of 120 VAC power to Panel C-511 Bus 'B'. At the time of the event, an RPS Channel 'A' (A1) and PCIS Channel 'A' (A1) trip signal existed because an RPS Channel 'A' low water level relay was de-energized for maintenance. The coincident Channel 'A' and Channel 'B' low water level trip signals resulted in the PCIS and RBIS actuation.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 386A's) (17)

The PCIS isolation signal resulted in the following designed responses:

- The inboard and outboard Primary Containment System (PCS) Group 2/Sampling System isolation valves that were in the open position closed automatically.
- The inboard and outboard PCS Group 3/Residual Heat Removal System isolation valves, in the closed position, remained closed.
- The inboard and outboard PCS Group 6/Reactor Water Cleanup (RWCU) System isolation valves, in the open position, closed automatically.

The RBIS isolation signal resulted in the following designed responses:

- The Secondary Containment System/Reactor Building Trains 'A' and 'B' supply and exhaust ventilation dampers closed automatically.
- The Secondary Containment System/standby Gas Treatment System (SGTS) Trains 'A' and 'B' started automatically.

The RBIS circuitry was reset at 0122 hours, the ventilation dampers were reopened, and the SGTS was returned to normal standby status. The PCIS circuitry was reset at 0130 hours and the RWCU System was returned to service.

Failure and Malfunction Report 91-212 was written to document the event. The NRC Operations Center was notified in accordance with 10 CFR 50.72 on June 4, 1991 at 0325 hours.

This event occurred during a refueling outage with the reactor mode selector switch in the REFUEL position. The Reactor Vessel (RV) was completely defueled and no fuel movement was in progress. The Control Rod Drive System was removed from service for maintenance. The RV/Refuel Cavity was flooded with the water temperature at approximately 85 degrees Fahrenheit.

CAUSE

The direct cause for the event was coincident Channel 'A' and 'B' low water level trip signals.

The root cause for the event was utility licensed operator error. The shift Nuclear Watch Engineer (senior licensed operator) did not ensure a sufficiently detailed review of plant conditions had been performed prior to authorizing the performance of the surveillance test (3.M.3-34).

At the time of the event, an RPS and PCIS Channel A1 low RV water level trip signal existed because the RPS Channel A1 low water level relay 5A-K6A was previously de-energized for maintenance. The relay was de-energized by the removal of its fuse. In addition, a manual RPS scram signal (RPS Channels A3 and B3) had been previously initiated because of CRD maintenance activities. Because the scram signal (RPS Channels A3 and B3) existed, the effect of the surveillance to the PCIS and RBIS was not recognized and the surveillance was authorized to be performed. At the time of the event, the RPS, PCIS and RBIS were not required to be operable.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

When EPA-3 was tripped during the surveillance test, Panel C-511 Bus 'B' including RPS Channels B1, B2, and B3, PCIS Channels B1 and B2, and the Refuel Floor Radiation Monitors' Channel 'B' logic relays became de-energized. The coincident low water level trip signals (Channels A1 and B1/B2) resulted in the event. The RBIS isolation occurred because coincident PCIS Channel A1 and B1/B2 low water level trip signals caused the RBIS Channel 'A' relay RPWAO and Channel 'B' relay RPWBO to become de-energized.

There were no component or system failures that caused this event or resulted from this event.

CORRECTIVE ACTION

The responsible Watch Engineer was counseled regarding the importance of ensuring plant conditions have been thoroughly reviewed prior to authorizing the performance of a surveillance test.

A review of this event will be included in the routine requalification program for licensed operators.

SAFETY CONSEQUENCES

This event posed no threat to the public health and safety.

The trip of EPA-3 was the designed response to moving the keylocked switch to the TEST position. The loss of power to Panel C-511 Bus 'B' was the designed response to the trip of EPA-3 while the RPS MG Set 'B' was powering Panel C-511 Bus 'B'.

The PCIS isolation signal was the designed response to coincident RPS Channel 'A' and Channel 'B' low water level trip signals. The RBIS isolation signal was the designed response to coincident PCIS Channel 'A' and Channel 'B' low water level trip signals.

The logic circuitry for RM-1 55-8A/B/C/D was not fully satisfied for the trip function because only the Channel 'E' logic relays became de-energized as a result of the loss of power to Panel C-511 Bus 'B'.

This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv) because the PCIS and RBIS isolation signal, although a designed response to coincident Channel 'A' and Channel 'B' low water level trip signals, was not a preplanned part of the surveillance test being performed.

SIMILARITY TO PREVIOUS EVENTS

A review was conducted of Pilgrim Station Licensee Event Reports (LERs) submitted since January 1984. The review focused on LERs submitted in accordance with 10 CFR 50.73(a)(2)(iv) involving a similar event that was caused by licensed operator error. The review identified no similar event.

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TEXT (If more space is required, use additional NRC Form 366A (17))

ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) CODES

The EIIS codes for this report are as follows:

COMPONENTSCODESBreaker (EPA-3)
Relay, Tripping (5A-K6A)BKR
RLYSYSTEMSContainment Isolation Control System (PCIS/RBIS)
Engineered Safety Features Actuation System (PCIS/RBIS)
Low-Voltage Power System - Class 1E
Reactor Building (SCS)
Standby Gas Treatment System (SGTS)JM
JE
ED
NG
BO